

Serial No. 10/691,856  
Amendment dated Dec. 8, 2005  
Reply to Office Action of Sept. 12, 2005

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

1. (canceled)
2. (currently amended) A filter cartridge ~~according to claim 1 wherein comprising:~~
  - (a) first and second, opposite, ends;
    - (i) the first end having an air flow exit aperture therethrough;
  - (b) filter media extending between the first and second ends;
  - (c) outer framework having a sidewall structure circumscribing the media at least at a location adjacent the first end and having an outer surface; the outer framework including an air permeable portion in the sidewall structure of the outer framework; and,
  - (d) a the first member of a non-continuously threaded, rotational engagement mechanism positioned adjacent to, and spaced from, the first end, and is positioned on an outer surface of the outer framework, integral with a remainder of the outer framework; and,
  - (e) an axial seal ring on the first end and circumscribing the air flow exit aperture.
3. (original) A filter cartridge according to claim 2 wherein:
  - (a) the outer framework extends completely between the filter cartridge first and second ends.
4. (original) A filter cartridge according to claim 3 wherein:
  - (a) the first end includes a first, molded, end cap and the axial seal ring is an integrally molded portion of the first, molded, end cap.

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5. (original) A filter cartridge according to claim 4 wherein:
- (a) the first end cap and seal ring comprise foamed polyurethane having a hardness, Shore A, of no greater than 30.
6. (currently amended) A filter cartridge ~~according to claim 1 wherein~~ comprising:
- (a) first and second, opposite, ends;
    - (i) the first end having an air flow exit aperture therethrough;
  - (b) filter media extending between the first and second ends;
  - (c) outer framework having a sidewall structure circumscribing the media at least at a location adjacent the first end and having an outer surface; the outer framework including an air permeable portion in the sidewall structure of the outer framework; and,
  - (d) a first member of a non-continuously threaded, rotational engagement mechanism positioned adjacent to, and spaced from, the first end, the first member of a rotational engagement mechanism on the outer surface of the outer framework comprises comprising a segmented ring; and,
  - (e) an axial seal ring on the first end and circumscribing the air flow exit aperture.
7. (original) A filter cartridge according to claim 6 wherein:
- (a) each segment, of the segmented ring, has first and second opposite ends with:
    - (i) the first end of each segment having a tip; and
    - (ii) the second end of each segment, of the segmented ring, having a stop.
8. (original) A filter cartridge according to claim 6 wherein:
- (a) each ring segment has a cammed surface on a side thereof facing toward said second end cap.

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9. (currently amended) A filter cartridge according to claim 1 wherein comprising:
- (a) first and second, opposite, ends;
    - (i) the first end having an air flow exit aperture therethrough;
  - (b) filter media extending between the first and second ends;
  - (c) outer framework having a sidewall structure circumscribing the media at least at a location adjacent the first end and having an outer surface; the outer framework including an air permeable portion in the sidewall structure of the outer framework, said outer framework extends extending from said first end to said second end and includes including:
    - (i) an imperforate shield section adjacent said first end and extending over an axial distance of at least 10% of the axial length of the outer framework; and,
    - (ii) a perforate section having an open area of at least 50% extending between the shield section and the second end; the perforate section having an axial length of at least 20% of the axial length of the outer framework; and,
  - (d) a first member of a non-continuously threaded, rotational engagement mechanism positioned adjacent to, and spaced from, the first end; and,
  - (e) an axial seal ring on the first end and circumscribing the air flow exit aperture.
10. (original) A filter cartridge according to claim 9 wherein:
- (a) the perforate section of the outer framework having an open area of at least 50% comprises a plurality of axial strips interconnected by a spiral, radial, structure.
11. (currently amended) A filter cartridge according to claim 1 wherein comprising:
- (a) first and second, opposite, ends;
    - (i) the first end having an air flow exit aperture therethrough;
  - (b) filter media extending between the first and second ends;
  - (c) outer framework having a sidewall structure circumscribing the media at least at a location adjacent the first end and having an outer surface; the outer framework

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including an air permeable portion in the sidewall structure of the outer framework; and

(d) a first member of a non-continuously threaded, rotational engagement mechanism positioned adjacent to, and spaced from, the first end; and,

(e) an axial seal ring on the first end and circumscribing the air flow exit aperture:  
wherein:

the outer framework comprises a molded plastic member extending between the first and second ends; and includes:

- (i) a first, open, end embedded within a first end cap potting and defining an air flow outlet aperture; and
- (ii) a second end embedded within a second end cap potting and including:
  - (A) a central, imperforate end region; and,
  - (B) an outer, annular, perforate, region surrounding the central, imperforate, region;
    - (1) the annular perforate, region being embedded in, and closed by, the second end cap potting; and
    - (2) at least a central portion of the central, imperforate, region not being embedded in the second end cap potting.

12. (currently amended) A filter cartridge according to claim [[10]] 11 wherein:  
(a) the second end has an outer axial, central, surface with central recess therein.

13. (original) A filter cartridge according to claim 12 wherein:  
(a) said central recess in non-circularly shaped.

14. (original) A filter cartridge according to claim 13 wherein:  
(a) said central recess is plus shaped.

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15. (currently amended) A filter cartridge ~~according to claim 1 wherein~~ comprising:
- (a) first and second, opposite, ends;
    - (i) the first end having an air flow exit aperture therethrough;
  - (b) filter media extending between the first and second ends;
  - (c) outer framework having a sidewall structure circumscribing the media at least at a location adjacent the first end and having an outer surface; the outer framework including an air permeable portion in the sidewall structure of the outer framework, and having the outer framework has a conical shaped portion with a portion adjacent the first end having an outer diameter D1 and a portion adjacent the second end having an outer diameter D2, wherein  $D1 > D2$ ; and,
  - (d) a first member of a non-continuously threaded, rotational engagement mechanism positioned adjacent to, and spaced from, the first end; and,
  - (e) an axial seal ring on the first end and circumscribing the air flow exit aperture.
16. (original) A filter cartridge according to claim 15 wherein:
- (a) D1 is at least 10% larger than D2.
17. (original) A filter cartridge according to claim 15 wherein:
- (a) the conical portion of the outer framework has a conical angle within the range of 1° to 4°.
18. (original) An air cleaner assembly comprising:
- (a) a housing having a sidewall and first and second opposite ends;
    - (i) the first end being closed and having an axial outlet tube therein;
    - (ii) the housing including a dust drop tube adjacent the first end;
    - (iii) the housing including a side air flow inlet adjacent the second end;
    - (iv) the housing sidewall second end being an open end; and,
    - (v) the housing having an end cover removably mounted to close the housing second end; the end cover being a completely closed end cover and having a precleaner comprising a shield having a spiral ramp on an outer surface

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thereof; the precleaner being positioned to operably receive air from the said air flow inlet, in use.

19. (original) An air cleaner assembly according to claim 18 including:
- (a) a conical, removable and replaceable, primary filter cartridge positioned therein with:
    - (i) a larger diameter end of the primary filter cartridge sealed to the housing, at a location around the air flow outlet, by an axial seal; and,
    - (ii) with a narrow end of the primary filter cartridge surrounded by the precleaner.
20. (canceled)